REMARKS

In reply to the Office Action of August 10, 2006, Applicant submits the following remarks. Claims 1-2, 5, 10, 15, 17-21, 24-26, and 32 have been amended. Support for the amendments to claims 1 and 24 can be found at least on page 8, the second full paragraph, and on page 9, first full paragraph. Claims 4, 7, 22-23 and 26-27 are canceled. Applicant respectfully reserves the right to prosecute the canceled subject matter in a continuing application. Applicant respectfully requests reconsideration in view of the foregoing amendments and these remarks.

Section 112 Rejections

Claims 1-2, 4-5, 7-14 and 24-32 were rejected under 35 U.S.C. § 112, ¶ 2, as being indefinite. Applicant traverses, either based on the claims before amendment or because of the amendments made to the claims.

The Examiner argues that the claims are rendered indefinite by the thermal energy limitations. According to the Examiner, it is unclear as to whether or not the thermal energy of the layer is constant and it is not clear if the relationship between the LUMO/HOMO of a specific trap material and the thermal energy of the layer is constant.

Applicant notes that the standard for definiteness is whether those skilled in the art understand what is claimed (Amgen, Inc. v. U.S. Int'l Trade Comm'n, 927 F.2d 1200, 1217 (Fed. Cir. 1991)). Further, that the familiar canons of claim construction are used to construe claims, such as to construe the claims as one skilled in the art would understand them in light of the specification (Oakley, Inc. V. Sunglass Hut International, 316 F.3d 1331, 1340-1341 (Fed. Cir. 2003)).

Applicant agrees that the numerical value for thermal energy is affected by temperature. However, Applicant submits that the claims are not indefinite, because a person of ordinary skill in the art would understand that claim 1 refers to an emissive polymer layer between room temperature or a temperature at which the emissive polymer layer would be operable.

Claim 24 refers to an OLED device that "upon introduction of holes and electrons into the emissive polymer layer, emission of light occurs". When the OLED device is not emitting, it is typically at the temperature of the surroundings, which is generally room temperature. When the OLED is emitting, typically the temperature of the device increases.

Above a particular temperature, such as above its glass transition temperature, the organic material of an organic light emitting layer begins to severely degrade and would not be useful as an emissive polymer layer of an OLED device (*see, e.g.*, U.S. Patent No. 6,013,538, col. 7, lines 9-24, "Organic layer(s) 116 should not be heated to their glass transition temperature or above during deposition of passivation layer 119. Typical glass transition temperatures for organic layer(s) 116 include the range from about 63° C to 150° C". And, U.S. Patent No. 6,897,473 ("Burroughes"), "Even during the measurement period for the data for FIG. 5 it was found that the device suffered rapid decay, believed to be due to recrystallisation resulting from heating." (col. 11, lines 49-51). Applicant notes that emitting polymers with higher glass transition temperatures are known. For example, PPV is said to have a T_g of 220° C, according to Poly(p-phenylenevinylene) by chemical vapor deposition : synthesis, structural evaluation, glass transition, electroluminescence, and photoluminescence, Schäfer O. ; Greiner A.; Pommerehne J.; Guss W.; Vestweber H.; Tak H. Y.; Bässler H.; Schmidt C.; Lüssem G.; Schartel B.; Stümpflen V.; Wendorff J. H.; Spiegel S.; Möller C.; Spiess H. W., Synthetic metals, 1996, vol. 82, no. 1, pp. 1-9 (23 ref.), the abstract of which accompanies this response).

Further, the specification describes OLED devices. OLED devices are typically found at room temperature, such as when they are not being driven, or at operating temperature while being driven to emit light. Reading the specification teaches one that an OLED is used to emit light, or for lighting purposes (last paragraph on page 10 of the specification as filed), and leads one of ordinary skill in the art to interpret the thermal energy at between room temperature and operating temperature. For at least these reasons, applicant submits that the claims are not indefinite.

Claim 32 was amended to add the limitation of "at a temperature of 300K".

Claims 2, 4, 5, 7, 10 and 25-26 were rejected as indefinite because of particular terms in the claims, such as substantially, significantly, minimized and if. These claims have either been amended or cancelled and applicant submits that the indefiniteness rejection based on these terms has been rendered moot.

Section 102 Rejections

Claims 1-2, 5, 7, 24-25, 28 and 30-32 were rejected as being anticipated under 35 U.S.C. § 102(b) by U.S. Publication No. 2001/0031509 ("Yamazaki"). Applicant respectfully disagrees.

Yamazaki describes a light-emitting device with an emission layer 103 having an electron trap region 106 and a hole trap region 107 formed in the interior of the emission layer 103 (Fig. 1B, Abstract). A blow up of the layers shows an organic emissive layer 309 that includes three emission layers, 309a, 309b, 309c (FIG. 3A and 3B, paragraph 35). There are clusters of organic substances 311 is formed in the interface of the emission layer 309a and the emission layer 309b and a cluster of organic substances 312 is formed in the interface of the emission layer 309b and the emission layer 309c. The cluster of organic substances 311 forms a hole trap region and the cluster of organic substances 312 forms an electron trap region (paragraph 36). Re-coupling takes place when either the electron or the hole is enclosed in the trap region, 106 or 107, whereby emission of light occurs (FIGs. 1B, 2B, paragraphs 18, 39, see also the arrows in the FIGs.). The result of the addition of the regions is to increase re-coupling efficiency in comparison to a device lacking the hole trap region and the electron trap region (paragraph 18).

Claim 1 requires an emissive polymer layer wherein upon introduction of holes and electrons into the emissive polymer layer, emission of light occurs primarily due to recombination at the host components. Yamazaki fails to teach or suggest an emissive polymer layer wherein upon introduction of holes and electrons into the emissive polymer layer, emission of light occurs primarily due to recombination at the host components. Yamazaki describes the electron or the hole as being trapped so that re-coupling takes place when the electron or hole is trapped, but does not describe recombination occurring primarily at the host. For at least this

reason, applicant submits that Yamazaki does not anticipate claim 1, or the claims that depend therefrom, including claims 2, 5, 7-11, 13-14 and 29-32.

Claim 24 is directed to an OLED device an emissive polymer layer having host components, wherein upon introduction of holes and electrons into the emissive polymer layer, emission of light occurs primarily due to recombination at the host components. For at least the reasons provided above, applicant submits that claim 24 and claims 25 and 28 are not anticipated by Yamazaki.

Claims 1-2, 5, 8-11, 13-14 and 24-32 were rejected as being anticipated by Burroughs. Applicant respectfully disagrees.

Burroughes describes a device with an emissive layer including F8 host polymer and PFM (84% F8 with 16% PFM) (col. 11, line 55-col. 12, line 11). PFM acts as a hole trap in the emissive layer. "Sufficient recombination does occur on the F8 to suggest that holes are injected into the F8 from the hole transport layer of BFA, but shows that most of the recombination of the holes and electrons occurs on the PFM rather than the F8. Thus, localized holes form electron-hole pairs with reasonable probability that the electron can be excited to the PFM region". The wavelength of the emitted light shifts when the PFM is added to the F8, as seen in FIG. 8. In a device with 84% F8 and 16% TFB, the radiative recombination is split roughly equally between the TFB and F8 polymers (col. 12, lines 12-29). Emission spectra shifts are seen when 16% TFB is added to F8 (FIG. 11) and when TFB and PFM are added to F8 (FIG. 14).

Burroughes does not teach an emissive polymer layer wherein upon introduction of holes and electrons into the emissive polymer layer, emission of light occurs primarily due to recombination at the host components. Rather, Burroughes shifts the recombination to the components that are added to the host polymer. For at least this reason, applicant submits that claim 1 is not anticipated by Burroughes. Claims 2, 5, 8-11, 13-14 and 26 depend from claim 1 and are similarly not anticipated.

Claim 24 is directed to an OLED having emissive polymer layer wherein upon introduction of holes and electrons into the emissive polymer layer, emission of light occurs

primarily due to recombination at the host components. For at least the reasons provided above with respect to claim 1 as amended, applicant submits that claim 24 as amended is not anticipated by Burroughes. Claims 25 and 28 depend from claim 24 and are similarly not anticipated by Burroughes. Applicant respectfully requests withdrawal of the anticipation rejections.

Section 103 Rejections

Claims 8-14, 27 and 29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamazaki in view of U.S. Patent No. 5,601,903 ("Fujii"). Applicant respectfully disagrees.

The rejected claims are dependent claims which necessarily require the limitations of the claims from which they depend.

Fujii describes an organic EL element with either an organic luminous layer or an organic carrier transport layer being doped with an organic material that lowers the conducting band of the layer in which it is doped into or raises the valence band of the layer in which it is doped into (Abstract). Fujii describes the organic luminous layer as being formed of tris(8-hydroxyquinoline)aluminum (Alq_3) (col. 22, lines 32-34).

While Fujii described an organic EL element with an organic luminous layer, Fujii does not suggest forming a device an emissive polymer layer. Rather, Fujii forms an organic luminous layer from Alq_3, which is a small molecule and not a polymer. Because both Yamazaki and Fujii fail to suggest or disclose an emissive polymer layer wherein upon introduction of holes and electrons into the emissive polymer layer, emission of light occurs primarily due to recombination at the host components, applicant submits that no *prima facie* case of obviousness has been made with respect to claims 8-14, 27 and 29. Applicant respectfully requests withdrawal of the obviousness rejections.

The three-month extension of time fee in the amount of $1,020 is being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other required charges or credits to deposit account 06-1050.

Respectfully submitted,

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